CHEM 1012 Introductory Chemistry Laboratory for Non-Science Majors Lec. 0 Lab. 3 Cr. 1

Effective Date Summer 2005-2006

Course Description

Prerequisite: A grade of "C" or better in CHEM 1001. Corequisite: CHEM 1002. A laboratory course covering the fundamentals of inorganic, organic and biochemical operations and techniques.

Course Objectives

Students will:

1. Learn proper basic laboratory techniques.
2. Understand basic chemistry concepts demonstrated by the laboratory procedures.
3. Report measurements properly and use them to determine calculated values.

Procedures to Evaluate these Objectives

1. Written laboratory reports which require the student to execute the experiment with proper technique and then apply the concepts to explain the results.
2. A comprehensive final exam which requires the student to apply techniques and concepts learned in the laboratory procedures.

Use of Results of Evaluation to Improve the Course

1. Evaluation and modification of laboratory techniques presentation during lab.
2. Laboratory reports will be corrected and used to pinpoint concept difficulties.
3. All evaluation methods will be used to determine the efficacy of the material presentation

Detailed Topical Outline

1. Basic laboratory techniques
    a. Safety
    b. Common glassware
    c. Top loading balances
    d. Volumetric flasks and pipets
    e. Brunsen burners
2. Inorganic principles examined
    a. Types of chemical reactions
    b. Acid-base titration
    c. Spectrophotometric analysis
    d. Equilibrium
3. Organic principles examined
    a. Synthesis (of aspirin)
    b. Extraction (caffeine from tea or coffee)
    c. (Thin-layer) Chromatography

4. Biochemical principles examined
    a. (Paper) Chromatography of (amino acids)
    b. Preparation (of soap from fat)
    c. Analysis of antacid strength (titration)